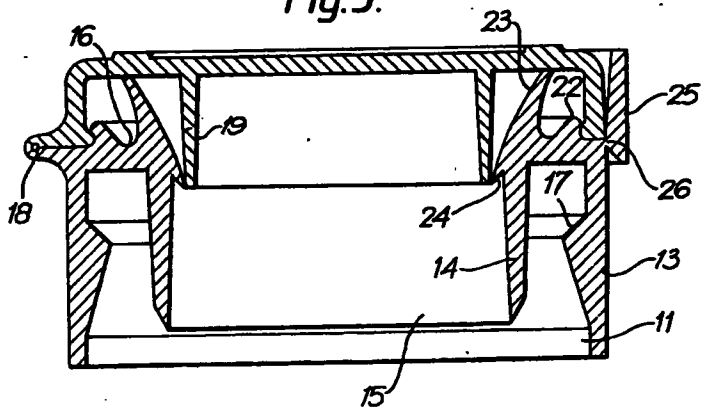
(12) UK Patent Application (19) GB (11) 2 035 274 A

(21) Application No 7846538
(22) Date of filing 29 Nov 1978
(43) Application published 18 Jun 1980
(51) INT CL³ B65D 39/00
(52) Domestic classification B8T 13A 14A 14B 14D BB
(56) Documents cited GB 1461026 GB 1459778 GB 1266610 GB 963332
(58) Field of search B8T
(71) Applicants Mardon Illingworth Limited, Forest Works, Coxmoor Road, Sutton-in-Ashfield, Notts. NG17 5LH.
(72) Inventors Henryk Dudzik
(74) Agents Eric Potter & Clarkson

(54) **Closure member**

(57) A one-piece moulded polyethylene closure member for dispensing fluids from a container is adapted to snap-fit or screw onto the container and comprises a tubular body portion 11 having a dispensing aperture 15, a captive closure cap hinged at 18 to the body portion, an annular skirt 19 on the cap adapted to project into the aperture when the cap is closed, and a resiliently deformable annular seal 24 projecting inwardly and downwardly from the lip of the aperture to cooperate with the skirt and seal the aperture when the cap is closed.

Fig.3.



The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

GB 2 035 274 A

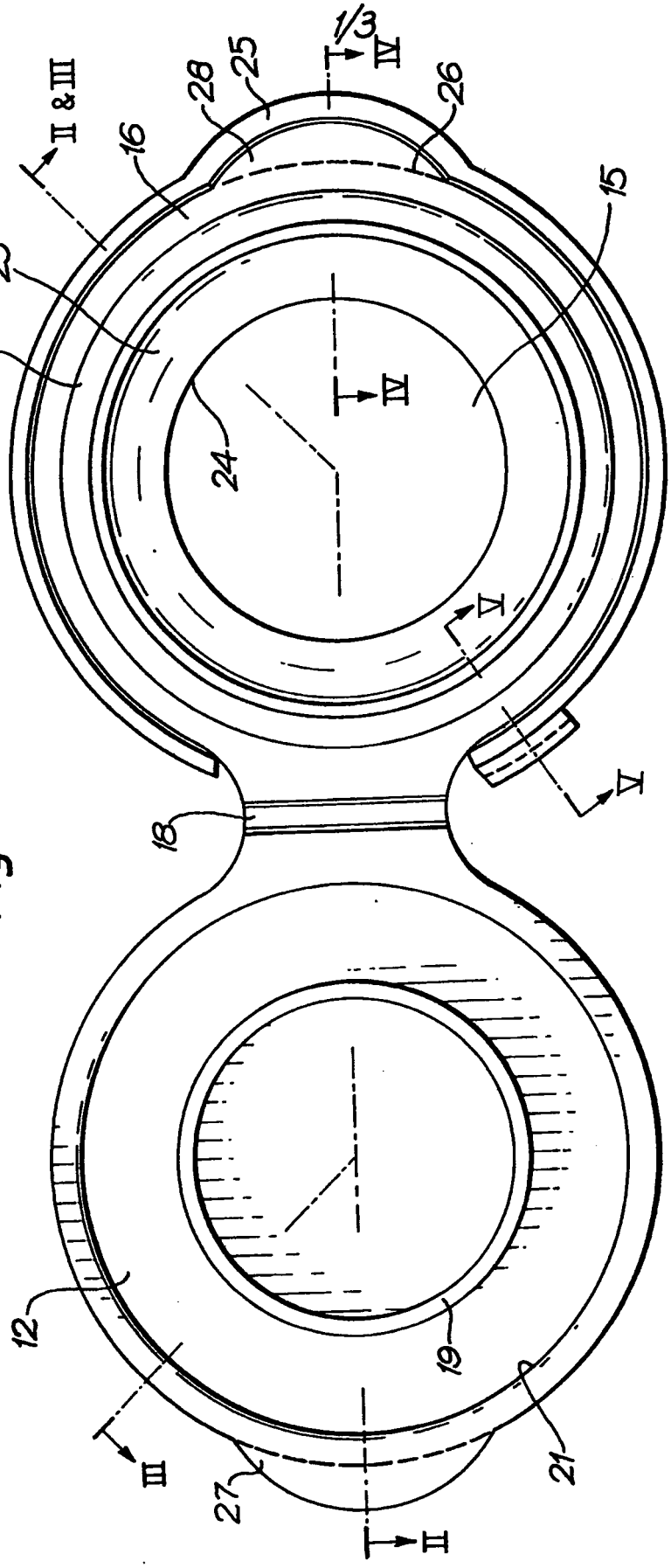


Fig.1.

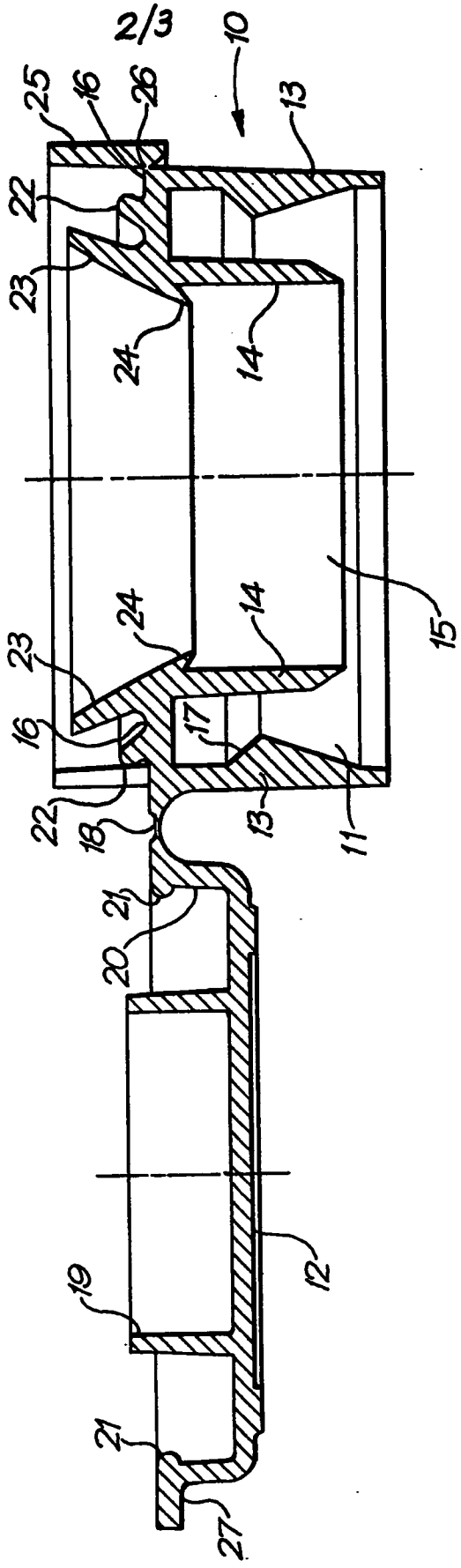


Fig.2.

Fig.3.

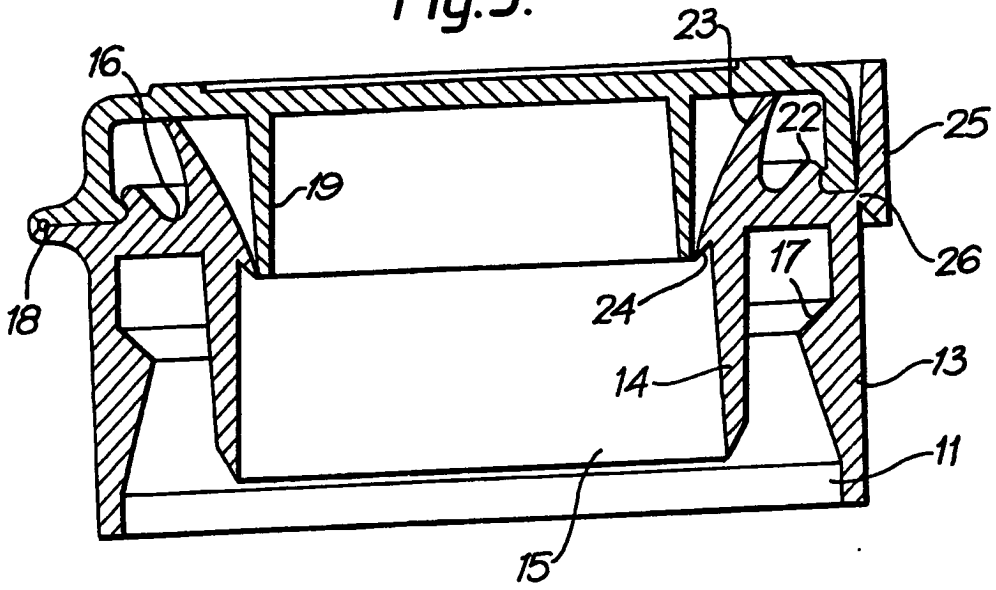


Fig.6.

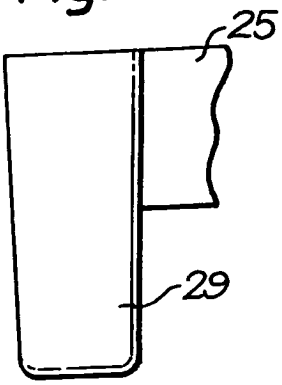


Fig.5.

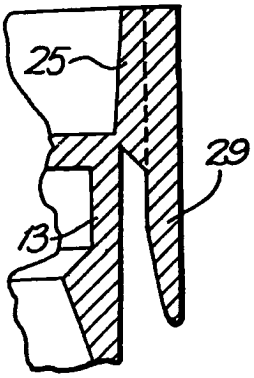
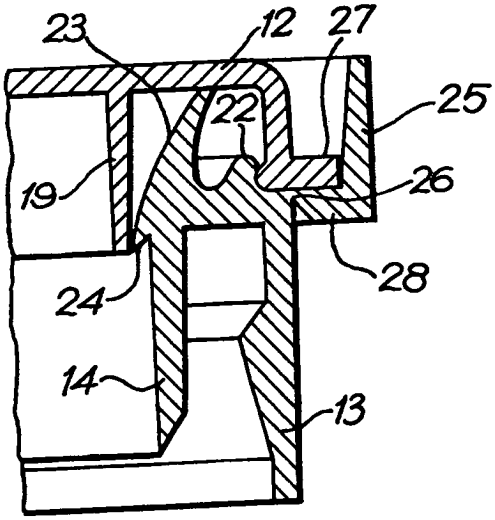


Fig.4.



SPECIFICATION

One-piece moulded dispensing closure member

This invention relates to a one-piece moulded plastics closure member for dispensing fluids from a container, and in particular to the type that has a captive closure cap.

According to the present invention there is provided a one-piece moulded plastics closure member for dispensing fluids from a container, the member comprising,

(a) a tubular body portion having an end face provided with a dispensing aperture,

(b) a captive closure cap hinged to the body portion,

(c) an annular skirt depending from the closure cap and adapted to project into the dispensing aperture when the cap is closed onto the end face, and

(d) a resiliently deformable annular sealing member projecting inwardly and downwardly from the lip of the dispensing aperture to seal the aperture when the cap is closed onto the end face.

The tubular body portion is preferably provided with a resiliently deformable annular wall surrounding the aperture and adapted to provide a seal with the underside of the cap when the cap is closed onto the end face. The annular wall may be flared outwardly from the axis of the tubular body portion.

Coopertive yieldable detent beads may be provided on the cap and body portion.

The detent bead on the cap may be provided by beading on the edge of an annular skirt depending from the cap.

The detent bead on the body portion may be provided by an annular bead on the end face of the body portion.

The body portion may be provided with a depending outer cylindrical skirt adapted to fit round the outside of a container neck, and provided with means for retaining the closure member on the neck.

The retaining means may comprise a conical undercut retainer bead on the inside of the outer skirt whereby the closure member may be snap-fitted onto the container neck.

The body portion may be provided with a depending inner cylindrical skirt adpated to fit into the container neck, defining at least in part the aperture, and, together with the outer skirt, defining a seal round the container neck.

The closure cap is preferably hinged to the end face at the periphery of the end face.

The closure member preferably includes a security device which may comprise a tear strip attached by a tearable line of weakness to the periphery of the tubular portion and providing an upwardly extending skirt arranged to cover at least the side portions of the cap when the cap is closed on the body portion, thereby inhibiting removal or opening of the cap while the tear strip is attached to the body portion.

The closure member may be moulded from polyethylene or a similar thermoplastic material.

The invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a top plan view of a closure member according to the invention, when open;

Figure 2 is a vertical sectional view of the closure member of Figure 1 taken along line II-II;

Figure 3 is a vertical section through the closure member of Figure 1 taken along line III-III, when closed;

Figure 4 is a vertical section through part of the closure member of Figure 1 taken along line IV-IV, when closed;

Figure 5 is a vertical section through part of the closure member of Figure 1 taken along line V-V, showing in particular a tear tab; and,

Figure 6 is a side view of the tear tab of Figure 5 taken in the direction of arrow VI in Figure 1.

In the drawings there is shown a one-piece resilient moulded polyethylene closure member 10 for use as a dispensing device for fluids. The closure member, when in use, will be attached to a container neck (not shown).

The closure member is of cylindrical construction and comprises a tubular body portion 11 adapted to fit onto the container neck, and a closure cap 12 attached to the body portion 11.

The tubular body portion 11 comprises coaxial cylindrical outer and inner walls or skirts 13, 14 respectively, the inner wall defining a dispensing aperture 15, and an annular portion interconnecting adjacent ends of the walls 13, 14 providing an end face 16 to the tubular body portion.

The outer wall 13 is provided on its inner surface with a conical undercut retainer bead 17 adapted to snap over a cooperating retainer bead (not shown) on the container neck. The resilience of the outer and inner walls 13, 14 provides a seal around the top edge of the container neck.

The closure cap 12 is hinged to the periphery of the end face 16 of the body portion 11 by a flexible web 18, and is provided with a centrally located annular skirt 19 which, when the closure cap is hinged over onto the body portion, as shown in Figure 3, is adapted to insert into the dispensing aperture 15. A second annular skirt 20 depends from the periphery of the closure cap, and the edge of this second skirt is provided with a detent bead cooperable with a corresponding annular detent bead 22 on the end face 16 of the body portion.

A resiliently deformable annular wall 23 is upstanding from the end face 16, surrounds the aperture 15 and flares outwardly from the central axis of the tubular body portion. The dimensions of the wall 23 are such that when the cap 12 is closed, the wall 23 contacts, and is deformed by, the underside of the cap 12 so as to form a seal.

Extending downwardly and inwardly from the lip of the aperture 15 is a resiliently deformable tapering annular web 24 which, when the cap is closed, contacts, and is deformed by the outer surface of the centrally located annular skirt 19, thereby to seal the aperture 15. It will be observed that, by virtue of the downwards and inwards tapering of the web 24, any upwards pressure of the contents of the container against the web will tend to deform it and press it

even harder against the skirt 19, thereby improving the quality of the seal. Further, the provision of the sealing member 24 enables a cap, such as the present one, which is constrained by the hinge 18 to move only in one plane, to be sealed into the aperture 15. It will be appreciated that the geometry of the movement of a cap rotating in one plane about a hinge makes it necessary for there to be adequate clearance in the mouth of the aperture for the skirt 19 of the cap to be received. Such clearance makes it difficult for the skirt to be sealed into the aperture, and it is the provision of the sealing member 24 that enables this problem to be overcome.

The closure member 10 is further provided with a security device in the form of a tear strip 25 attached by a tearable line of weakness 26 to the periphery of the body portion 11. The tear strip 25 extends round the periphery of the body portion from either side of the hinge 18 and provides a wall covering at least the sides of the cap 12 when the cap is closed on the body portion 11, thereby protecting the closure member from unathorised opening. The tear strip is provided with a finger grip 29 to initiate its removal, as shown in Figures 5 and 6.

The cap 12 is provided along a portion of its periphery opposite the hinge 18 with a lifting tab 27. The tear strip 25 is provided with an extended base portion 28 along a portion of its circumference to accomodate the lifting tab, as shown in Figure 4.

It will be understood that mouldable thermoplastic materials, such as polypropylene or polyvinyl chloride may be used instead of polyethylene. The closure member may alternatively be a screw fit onto the container neck.

CLAIMS

1. A one-piece moulded plastics closure member for dispensing fluids from a container, the member comprising,

(a) a tubular body portion having an end face provided with a dispensing aperture,

(b) a captive closure cap hinged to the body portion,

(c) an annular skirt depending from the closure cap and adapted to project into the dispensing aperture when the cap is closed onto the end face, and

(d) a resiliently deformable annular sealing member projecting inwardly and downwardly from the lip of the dispensing aperture to cooperate with the skirt and seal the aperture when the cap is closed onto the end face.

2. A closure member as claimed in claim 1 wherein the body portion is provided with a resiliently deformable annular wall surrounding the aperture and adapted to provide a seal with the underside of the cap when the cap is closed onto the end face.

3. A closure member as claimed in claim 2 wherein the annular wall is flared outwardly from the axis of the body portion.

4. A closure member as claimed in any preceding claim wherein there is provided a second annular skirt depending from the cap, lying outside of the first mentioned annular skirt, and adapted to contact the end face of the body portion when the cap is closed onto the end face.

5. A closure member as claimed in any preceding claim wherein cooperative yieldable detent beads are provided on the cap and body portion.

6. A closure member as claimed in claim 5 as dependant on claim 4 wherein the detent bead on the cap is provided by beading on the edge of the second annular skirt.

7. A closure member as claimed in claim 5 wherein the detent bead on the body portion is provided by an annular bead on the end face of the body portion.

8. A closure member as claimed in any preceding claim wherein the body portion is provided with a depending outer cylindrical skirt adapted to fit round the outside of a container neck, and provided with means for retaining the closure member on the neck.

9. A closure member as claimed in claim 8 wherein the retaining means comprises a conical undercut retainer bead on the inside of the outer skirt whereby the closure member may be snap-fitted onto the container neck.

10. A closure member as claimed in any preceding claim wherein the body portion is provided with a depending inner cylindrical skirt adapted to fit into the container neck and defining at least in part the aperture.

11. A closure member as claimed in claim 10 as dependant on claim 8 wherein the inner and outer cylindrical skirts depending from the body portion are adapted to define a seal round the container neck.

12. A closure member as claimed in any preceding claim wherein the closure cap is hinged to the end face at the periphery of the end face.

13. A closure member as claimed in any preceding claim including a security device comprising a tear strip attached by a tearable line of weakness to the periphery of the tubular portion and providing an upwardly extending skirt arranged to cover at least the side portions of the cap when the cap is closed on the body portion, thereby inhibiting removal or opening of the cap while the tear strip is attached to the body portion.

14. A closure member as claimed in any preceding claim when moulded from polyethylene or similar thermoplastic material.

15. A one-piece moulded plastics closure member as herein described with reference to the accompanying drawings.

Printed for Her Majesty's Stationery Office by Croydon Printing Company Limited, Croydon Surrey, 1980.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.